

REMARKS

Claims 16-24 and 26-32 are pending in the application.

Claims 16-24 and 26-32 are rejected.

Claim 27 is cancelled without prejudice.

Claims 16, 21, 26, 30 and 32 are amended.

New claims 33-36 are added.

No new matter is added.

Applicant requests reconsideration and allowance of the claims in light of the above amendments and following remarks.

Specification

The Examiner stated that the amendment filed August 11, 2009 is objected to under 35 U.S.C. 132(a) because he alleges it introduces new matter into the disclosure. The Examiner further alleged that the added material which is not supported by the original disclosure is: “the plurality of abrasives” bonded into the “through hole” as that recited in claim 21.

Without necessarily acquiescing in the objection of the specification, Claim 21 is amended to replace the limitation “a groove is formed in a main cutting face of the shank and a through-hole is formed in a sub-cutting face of the shank; and the plurality of abrasives are bonded into the groove and the through-hole” with the limitation, “the concave portion comprises a groove-type concave portion formed in a main cutting face of the shank, and a through-hole type concave portion formed in a sub-cutting face of the shank” to facilitate the allowance of this case. Therefore, the objection to the specification is now overcome.

Claim Rejections- 35 USC § 112

Claims 21 and 32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. In particular, the Examiner stated that it is not clear which is “the plurality of abrasives are bonded into the groove and the through-hole.”

As discussed above, claim 21 is now amended to delete the limitation, “the plurality of abrasives bonded into the through-hole.”

Further, the Examiner alleged that the specification does not provide support for “a top of the upper abrasive layer formed over the surface of the shank is lower than a top of the lower

abrasive layer” as recited in claim 32. Claim 32 is also amended to replace the term, “lower” with “higher” to correct an error.

Thus, the rejection of claims 21 and 32 under 35 U.S.C. 112, first paragraph, is now overcome.

Claim Rejections- 35 USC § 103

Claims 16, 19, 22 and 30-32 are rejected under 35 U.S.C. § 103(a) as being unpatentable over US Patent No. 5,611,326 to Caspani et al. (“Caspani”).

Claims 16-19, 22-25 and 28-31 are rejected under 35 U.S.C. § 103 as being unpatentable over Sung.

Claim 20 is rejected under 35 U.S.C. § 103 as being unpatentable over Sung as applied to claim 16 above, in view of US Patent No. 4,091,792 to Farrell.

Claim 21 is rejected under 35 U.S.C. § 103 as being unpatentable over Sung as applied to claim 16 above, in view of US Patent No. 4,091,792 to Farrell and US Patent No. 4,624,237 to Inoue.

Claims 26 and 27 are rejected under 35 U.S.C. § 103 as being unpatentable over Sung as applied to claim 16 above, in view of US Patent No. 5,989,405 to Murata et al (“Murata”). Applicant respectfully traverses the rejections.

Claim 16 is now amended to recite, among other things,

“A diamond tool having a shank and a plurality of abrasives attached thereto, wherein a plurality of concave portions are formed in a surface of the shank and a first portion of the plurality of abrasives are bonded into the concave portions to form a first abrasive layer, and wherein a second portion of the plurality of abrasives are formed over the first portion of the plurality of abrasives bonded into the concave portions and onto a top surface of the shank to form to form a second abrasive layer overlying the first abrasive layer, thereby forming multiple abrasive layers.” (Emphasis added) The amendment may be supported in FIGS. 7-8 and the corresponding texts.

According to some embodiments, the claimed invention includes multiple abrasive layers, i.e., the first abrasive layer bonded into the concave portions and the second abrasive layer overlying the first abrasive layer and onto a top surface of the shank. Therefore, even if some of the second abrasive layer wears off, the first abrasive layer underlying the second

abrasive layer can remain and be exposed to properly function as a diamond tool, extending the service life of the tools and improving the performance as compared with a conventional tool having a single abrasive layer as shown in the cited references.

The Examiner alleged that the claims “does not provide any distinction between these two pluralities of abrasives; therefore, it is the Examiner’s position that layers of abrasives (i.e. plurality of abrasives) bonded to each other and to the walls of the slots (i.e. concave portions) on top of each other reads on the new limitation to instant claims.”

However, as shown above, claim 16 as amended clearly distinguishes the two layers, which are respectively formed by first and second portions of the pluralities of abrasives by reciting, “a first portion of the plurality of abrasives are bonded into the concave portions to form a first abrasive layer, and wherein a second portion of the plurality of abrasives are formed over the first portion of the plurality of abrasives bonded into the concave portions and onto a top surface of the shank to form to form a second abrasive layer overlying the first abrasive layer, thereby forming multiple abrasive layers.” In particular, the second abrasive layer formed by the second portion of the plurality of abrasives overlies the first abrasive layer and is also formed *onto the top surface of the shank*. See FIG. 7 and 8 of the present application. Therefore, Applicant respectfully believes that there are enough characteristics of the second abrasive layer that can be distinguished from those of the first abrasive layer.

Caspani or Sung does not teach or disclose such unique features of the claimed invention recited in claim 16. For example, in Caspani or Sung, no second abrasive layer is formed over a **top surface of the shank** while overlying the first abrasive layer, as recited in claim 16.

Compare FIGS. 1-4 of Caspani and FIGS. 6A-7b of Sung with FIGS. 7-8 of the present application. In particular, in Caspani, diamond set abrasive bodies 5, 5', and 5'' are merely filled in the opening slots and no other diamond set abrasive bodies are formed over a top surface of the shank. Further, in Sung, the opening slots 214 are filled with diamond particles 20 and the diamond braze. However, diamond particles 20 are not formed over the top surface of the shank 200 (i.e., the matrix support material) and merely protrude along a direction of the opening slot. Nowhere do the cited references teach or suggest a portion of the plurality of abrasives formed over a top surface of the shank while overlying another portion of the plurality of abrasives bonded into the concave portions. Thus, none of the cited references teach or disclose all of the limitations of claim 16.

When determining whether a claim is obvious, an examiner must make “a searching comparison of the claimed invention – *including all its limitations* – with the teaching of the prior art.” *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (emphasis added). Thus, “obviousness requires a suggestion of all limitations in a claim.” *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (*citing In re Royka*, 490 F.2d 981, 985 (CCPA 1974)). The failure of an asserted combination to teach or suggest each and every feature of a claim remains fatal to an obviousness rejection under 35 U.S.C. § 103. Thus, the rejection does not present a *prima facie* case of obviousness. Accordingly, claim 16 is in condition for allowance.

Also, claims 17-24, 26, and 28-29, which depend from allowable claim 16, are also in condition for allowance for their dependency and their own merits. For example, claim 21 now recites, “the concave portion comprises a groove-type concave portion formed in a main cutting face of the shank, and a through-hole type concave portion formed in a sub-cutting face of the shank.” None of the cited references teach or disclose such features of claim 21.

In addition, none of the cited references teach or disclose, “an upper abrasive layer formed over the lower abrasive layer and over **a top surface** of the shank,” as recited in claim 30 for the same or similar reasons discussed above. Thus, claim 30 is in condition for allowance. Further, dependent claims 31-32, which depend from claim 30, are also in condition for allowance at least because of their dependency and their own merits.

New Claims

None of the cited references teach or suggest the limitations of new claims 33-36, e.g., “the second portion of the plurality of abrasives are formed on a topmost surface of the shank,” “the topmost surface of the shank is disposed between one of the plurality of concave portions and another one of the plurality of concave portions adjacent to the one of the plurality of concave portions,” as recited in claims 33 and 34 respectively.

CONCLUSION

For the foregoing reasons, reconsideration and allowance of all pending claims of the application as amended is requested. The Examiner is encouraged to telephone the undersigned at (503) 896-2643 if it appears that an interview would be helpful in advancing the case.

Respectfully submitted,



Hosoon Lee
Reg. No. 56,737

Customer No. 83219

9600 SW Oak Street, Suite 525
Tigard, OR 97223
Phone: 503) 896-2643